

HP PDNo. 10017566-1

## CLAIMS

What is claimed is:

1. A method for testing a service that provides interface functions having no user space interaction and that is runs in a kernel space of an operating system, said method comprising:

loading into the kernel space a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions of the service to be tested;

invoking the interface commands to exercise the interface functions to be tested; and

unloading the DLKM module.

2. A method in accordance with Claim 1 wherein invoking the interface commands further comprises loading a user library having user interfaces configured to test the kernel interfaces via the DLKM interface commands.

3. A method in accordance with Claim 2 wherein invoking the interface commands further comprises invoking the user interfaces of the user library via a program running in user space.

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4. A method in accordance with Claim 1 further comprising:

reading a file of function prototypes for an interface function to be tested into a memory of a computing apparatus;

generating in the memory of the computer apparatus a representation of a conduit function from each function prototype, the conduit function having a user-space accessible invocation that activates an interface function corresponding to the function prototype from which the conduit function was generated; and

assembling the conduit function representations into the pseudo device driver.

5. A method in accordance with Claim 4 wherein invoking the interface commands further comprises invoking the conduit functions to invoke the interface commands.

6. A method in accordance with Claim 1 wherein unloading the DLKM module comprises removing the interface commands corresponding to the interface functions of the service to be tested, so that the interface commands are no longer available.

7. A method in accordance with Claim 1 wherein the interface commands of the DLKM module are accessible only to a privileged user or users, and not to another user or users.

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8. A method in accordance with Claim 1 wherein invoking the interface commands to exercise the interface functions to be tested comprises opening the pseudo device driver, and invoking the interfaces of the device driver.

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9. A medium having recorded thereon machine readable instructions configured to facilitate testing of a computing apparatus having a service with interface functions that have no user space interaction and that runs in a kernel space of an operating system, said instructions configured to instruct the computing apparatus to:

load into said kernel space a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions of the service to be tested;

invoke said interface commands to exercise the interface functions to be tested; and

unload said DLKM module.

10. A medium in accordance with Claim 9 wherein to invoke the interface commands, said medium further has recorded thereon a user library having user interfaces configured to test the kernel interfaces via said DLKM interface commands.

11. A medium in accordance with Claim 10 wherein to invoke said interface commands, said medium further has recorded thereon instructions configured to invoke said user interfaces of the user library via a program running in user space.

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12. A medium in accordance with Claim 9 further having recorded thereon instructions configured to instruct the computing apparatus to:

read a file of function prototypes for an interface function to be tested into a memory of said computer apparatus;

generate in the memory of the computer apparatus a representation of a conduit function from each function prototype, said conduit function having a user-space accessible invocation that activates an interface function corresponding to the function prototype from which said conduit function was generated; and

assemble said conduit function representations into said pseudo device driver.

13. A medium in accordance with Claim 12 wherein to invoke the interface commands, said medium has recorded thereon instructions configured to invoke said conduit functions.

14. A medium in accordance with Claim 9 wherein the interface commands of the DLKM module are configured to be accessible only to a privileged user or users, and not to another user or users.

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15. A computing apparatus comprising a processor and a storage device having recorded thereon a kernel of an operating system that includes a service in kernel space that has interface functions without user space interaction, said computing apparatus configured to:

load, into the kernel space, a dynamically loadable kernel module (DLKM) containing a pseudo device driver having interface commands corresponding to the interface functions of the service to be tested;

invoke said interface commands to exercise the interface functions to be tested; and

unload said DLKM module.

16. A computing apparatus in accordance with Claim 15 wherein to invoke the interface commands, said computing apparatus is further configured to load a user library having user interfaces that are configured to test the kernel interfaces via said DLKM interface commands.

17. A computing apparatus in accordance with Claim 16 wherein to invoke said interface commands, said computing apparatus is further configured to invoke said user interfaces of said user library via a program running in user space.

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18. A computing apparatus in accordance with Claim 15 further configured to:

read a file of function prototypes for an interface function to be tested into a memory of said computing apparatus;

generate in said memory of said computing apparatus a representation of a conduit function from each function prototype, said conduit function having a user-space accessible invocation that activates an interface function corresponding to the function prototype from which said conduit function was generated; and

assemble said conduit function representations into said pseudo device driver.

19. A computing apparatus in accordance with Claim 18 wherein to invoke said interface commands, said computing apparatus is further configured to invoke said conduit functions that invoke the interface commands.

20. A computing apparatus in accordance with Claim 15 wherein to unload said DLKM module, said computing apparatus is configured to remove said interface commands corresponding to the interface functions of the service to be tested, so that said interface commands are no longer available.